

MSC-23153-1

ABSTRACT OF THE DISCLOSURE

Method and apparatus are provided for determining a superstrate on or near a sensor, e.g., for detecting the presence of an ice superstrate on an airplane wing or a road.

5 In one preferred embodiment, multiple measurement cells are disposed along a transmission line. While the present invention is operable with different types of transmission lines, construction details for a presently preferred coplanar waveguide and a microstrip waveguide are disclosed. A computer simulation is provided as part of the invention for predicting results of a simulated superstrate detector system. The  
10 measurement cells may be physically partitioned, non-physically partitioned with software or firmware, or include a combination of different types of partitions. In one embodiment, a plurality of transmission lines are utilized wherein each transmission line includes a plurality of measurement cells. The plurality of transmission lines may be multiplexed with the signal from each transmission line being applied to the same phase  
15 detector. In one embodiment, an inverse problem method is applied to determine the superstrate dielectric for a transmission line with multiple measurement cells.